

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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1 1. (Currently amended) A method for using empirical measurements of
2 accesses to synchronization points within an application to construct a
3 performance model for the application, comprising:
4 modifying the application to record statistics related to the synchronization
5 points within the application, wherein the statistics include a directed call graph
6 specifying an ordering of function calls;
7 running the application to produce the statistics related to synchronization
8 points;
9 constructing the performance model based upon the statistics, wherein the
10 performance model is a queuing system model in which synchronization points in
11 the application are represented by service centers in the queuing system model,
12 wherein constructing the performance model involves constructing a queuing
13 model, wherein each synchronization point is a service center for jobs
14 representing processes that circulate between service centers in a manner specified
15 by the directed call graph; and
16 using the performance model to predict a performance of the application.

1 2. (Original) The method of claim 1,
2 wherein constructing the performance model based upon the statistics
3 involves constructing an analytic model for the application; and

4 wherein using the performance model to predict the performance involves
5 numerically solving the analytic model to predict the performance for the
6 application.

1 3. (Original) The method of claim 1,
2 wherein constructing the performance model based upon the statistics
3 involves constructing a simulation model for the application; and
4 wherein using the performance model to predict the performance involves
5 running the simulation model to predict the performance for the application.

1 4. (Original) The method of claim 1, wherein modifying the application
2 involves compiling the application with a profiling option in order to record the
3 statistics related to the synchronization points.

B 1 5. (Original) The method of claim 1, wherein modifying the application
2 involves modifying the executable code of the application to record the statistics
3 during system calls that operate on the synchronization points.

1 6. (Original) The method of claim 1, wherein the statistics include:
2 an identifier for a calling function;
3 an identifier for a mutual exclusion variable;
4 a time spent holding the mutual exclusion variable; and
5 a frequency of accesses to the mutual exclusion variable.

1 7-8. (Canceled).

1 9. (Currently amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a

3 method for using empirical measurements of accesses to synchronization points
4 within an application to construct a performance model for the application, the
5 method comprising:
6 modifying the application to record statistics related to the synchronization
7 points within the application, wherein the statistics include a directed call graph
8 specifying an ordering of function calls;
9 running the application to produce the statistics related to synchronization
10 points;
11 constructing the performance model based upon the statistics, wherein the
12 performance model is a queuing system model in which synchronization points in
13 the application are represented by service centers in the queuing system model,
14 wherein constructing the performance model involves constructing a queuing
15 model, wherein each synchronization point is a service center for jobs
16 representing processes that circulate between service centers in a manner specified
17 by the directed call graph; and
18 using the performance model to predict a performance of the application.

1 10. (Original) The computer-readable storage medium of claim 9,
2 wherein constructing the performance model based upon the statistics
3 involves constructing an analytic model for the application; and
4 wherein using the performance model to predict the performance involves
5 numerically solving the analytic model to predict the performance for the
6 application.

1 11. (Original) The computer-readable storage medium of claim 9,
2 wherein constructing the performance model based upon the statistics
3 involves constructing a simulation model for the application; and

4 wherein using the performance model to predict the performance involves
5 running the simulation model to predict the performance for the application.

1 12. (Original) The computer-readable storage medium of claim 9, wherein
2 modifying the application involves compiling the application with a profiling
3 option in order to record the statistics related to the synchronization points.

1 13. (Original) The computer-readable storage medium of claim 9, wherein
2 modifying the application involves modifying the executable code of the
3 application to record the statistics during system calls that operate on the
4 synchronization points.

1 14. (Original) The computer-readable storage medium of claim 9, wherein
2 the statistics include:
3 an identifier for a calling function;
4 an identifier for a mutual exclusion variable;
5 a time spent holding the mutual exclusion variable; and
6 a frequency of accesses to the mutual exclusion variable.

1 15-16. (Canceled).

1 17. (Currently amended) An apparatus for using empirical measurements
2 of accesses to synchronization points within an application to construct a
3 performance model for the application, comprising:
4 a modification mechanism that is configured to modify the application to
5 record statistics related to the synchronization points within the application,
6 wherein the statistics include a directed call graph specifying an ordering of
7 function calls;

8 an execution mechanism that is configured to run the application to
9 produce the statistics related to synchronization points;
10 a performance model construction mechanism that is configured to
11 construct the performance model based upon the statistics, wherein the
12 performance model is a queuing system model in which synchronization points in
13 the application are represented by service centers in the queuing system model,
14 wherein the performance model construction mechanism is configured to
15 construct a queuing model, wherein each synchronization point is a service center
16 for jobs representing processes that circulate between service centers in a manner
17 specified by the directed call graph; and
18 a performance predicting mechanism that is configured to use the
19 performance model to predict a performance of the application.

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1 18. (Original) The apparatus of claim 17,
2 wherein the performance model construction mechanism is configured to
3 construct an analytic model for the application; and
4 wherein the performance predicting mechanism is configured to predict
5 the performance of the application by numerically solving the analytic model.

1 19. (Original) The apparatus of claim 17,
2 wherein the performance model construction mechanism is configured to
3 construct a simulation model for the application; and
4 wherein the performance predicting mechanism is configured to predict
5 the performance of the application by running the simulation model.

1 20. (Original) The apparatus of claim 17, wherein the modification
2 mechanism is configured to compile the application with a profiling option in
3 order to record the statistics related to the synchronization points.

1 21. (Original) The apparatus of claim 17, wherein the modification
2 mechanism is configured to modify the executable code of the application to
3 record the statistics during system calls that operate on the synchronization points.

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1 22. (Original) The apparatus of claim 17, wherein the statistics include:
2 an identifier for a calling function;
3 an identifier for a mutual exclusion variable;
4 a time spent holding the mutual exclusion variable; and
5 a frequency of accesses to the mutual exclusion variable.

1 23-24. (Canceled).
